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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/581,707	03/29/2007	David Lee Davidson	06127-PCT-PA (0083.0037)	4893
7590 12/04/2009 HODES, PESSIN & KATZ P.A. 901 Dulany Valley Road Suite 400 Towson, MD 21204				
EXAMINER STANLEY, JANE L				
ART UNIT		PAPER NUMBER		
1796				
MAIL DATE		DELIVERY MODE		
12/04/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/581,707

**Applicant(s)**

DAVIDSON ET AL.

**Examiner**

JANE L. STANLEY

**Art Unit**

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 January 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☒ Claim(s) 1, 7-8 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☒ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/22)
- Paper No(s)/Mail Date \_\_\_\_\_

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Claim Objections***

**Claim 1** is objected to because of the following informalities: part (b) line 6 recites "and an and" and should instead recite --and an--. The claim recites "+175 °C, below 827 kPa" and should instead recite --+175 °C below 827 kPa-- or --+175 °C of below 827 kPa--. Appropriate correction is required.

**Claim 7** is objected to because of the following informalities: the claim recites "The heat transfer fluid in accordance with Claim 1(a) wherein the ponderal..." and should instead recite --The heat transfer fluid in accordance with claim 1 wherein when (a) is selected the ponderal...--. Appropriate correction is required.

**Claim 8** is objected to because of the following informalities: the claim recites "The heat transfer fluid in accordance with Claim 1(b) wherein the ponderal..." and should instead recite --The heat transfer fluid in accordance with claim 1 wherein when (b) is selected the ponderal...--. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

**Claims 1-13** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

**Regarding claim 1**, it is unclear if the components of the heat transfer fluid claimed are selected from just (a) or just (b), or if components of both (a) and (b) are required. For the purpose of this Office action the Examiner has interpreted the claim to mean the components are selected from either (a) or (b) and not both.

Furthermore, in both (a) and (b) the claim recites "provided that the total number of carbon atoms in the alkyl moiety(ies) is in the range of from 1 to 10". It is unclear which alkyl moiety(ies) is being referred to. In the instance of (a) "alkyl moiety(ies)" could be referring to the alkyl-benzene or the polyalkyl-benzene or to the combination thereof. In the instance of (b) "alkyl moiety(ies)" could be referring to the alkyl-benzene or the polyalkyl-benzene or to the combination thereof.

Furthermore, it has been assumed by the Examiner that the recitation of "a vapor pressure at +175 °C, below 827 kPa, and a viscosity, measured at the cloud point temperature of the fluid +10 °C, below 400 cP" was intended to mean that the vapor pressure of the composition is below 827 kPa when measured at +175 °C and that the viscosity of the composition is below 400 cP when measured at the cloud point temperature of the fluid plus 10 °C. Clarification is requested.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then

narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, **claim 1** recites the broad recitation of 'a cloud point below -100 °C', and the claim also recites 'preferably in the range of from -110 °C to -175 °C' which is the narrower statement of the range/limitation.

**Regarding claim 2**, the claim recites "the alkyl moiety in the aromatic component" and it is unclear as to which aromatic component is being referred to. Both (a) and (b) in claim 1 individually recite two possible aromatic components.

Furthermore, the claim recites such alkyl moieties as "methyl (n-propyl)" etc. and it is unclear what structure this is intended to represent as such a term is chemically/structurally ambiguous.

**Regarding claim 6**, the claim contains a plurality of chemical names that appear to be written backwards. For example, pentane-2,2,4-trimethyl has been assumed to mean/be 2,2,4-trimethylpentane. Clarification is requested.

**Regarding claims 7-8 and 10-12**, the claims recite a ponderal ratio. The term "ponderal ratio" in the claims is a relative term which renders the claims indefinite. The term "ponderal ratio" is not defined by the claim, the specification does not provide a

standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1-5 and 7-13** are rejected under 35 U.S.C. 102(b) as being anticipated by Hsu et al. (US 6,086,782).

**Regarding claims 1-5**, Hsu teaches a two component heat transfer fluid comprising a terpene component and an alkylbenzene component (abstract). Hsu further teaches the terpene is a C<sub>10</sub>H<sub>16</sub> hydrocarbon (col 4 ln 47-50) including acyclic terpenes, etc (see Table 2) (instant aliphatic hydrocarbon; instant 5 to 15 carbons; instant 5 to 10 carbons) and teaches the alkylbenzene includes diethyl benzene, propyl benzene, butyl benzene, etc (col 9 ln 39-46) (instant aromatic component; instant alkyl benzene). Hsu teaches the heat transfer fluid retain the liquid phase at temperatures in the range from about 0 °F to about -175 °F (abstract; see Examples) and in which they do not exhibit a significant increase in viscosity or gelation (col 2 ln 60-63).

Hsu does not specifically teach the viscosity when measured at the cloud point temperature of the fluid + 10 °C to be below 400 cP or below 300 cP. However, Hsu does teach that the viscosity does not increase significantly within the working liquid

temperature range. Furthermore, as the combination of terpene and alkylbenzene disclosed by Hsu is the claimed composition consisting of an alkyl-benzene and an aliphatic hydrocarbon with 5-15 carbons, it is inherent that the compositions of Hsu will have this property i.e. viscosity below 400 cP, when measured under the claimed conditions, absent evidence to the contrary.

Hsu also does not specifically recite a vapor pressure at +175 °C of below 827 or below 621 kPa. However, as the combination of terpene and alkylbenzene disclosed by Hsu is the claimed composition consisting of an alkyl-benzene and an aliphatic hydrocarbon with 5-15 carbons, it is inherent that the compositions of Hsu will have this property i.e. vapor pressure below 827 kPa, when measured under the claimed conditions, absent evidence to the contrary.

**Regarding claims 7, 9-10 and 13**, as these claims are directed to the non-selected options of instant claim 1, specifically group (a), and are not positively recited these claim limitations are deemed met.

**Regarding claims 8 and 11-12**, Hsu does not specifically recite ponderal ratios. However, as the compositions disclosed by Hsu including terpene and alkylbenzene are the instantly claimed aliphatic hydrocarbon and aromatic alkyl benzene, present in the claimed amounts, it is inherent that they would have this property, absent evidence to the contrary.

As a practical matter, the Patent Office is not equipped to manufacture products by the myriad of processes put before it and then obtain prior art products and make physical comparisons therewith" (see *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685,

688 (CCPA 1972)). Since the PTO does not have proper means to conduct experiments, the burden of proof is now shifted to Applicants to show otherwise (see *In re Best*, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977); see also *In re Fitzgerald*, 205 USPQ 594 (CCPA 1980)).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

**Claim 6** is rejected under 35 U.S.C. 103(a) as being unpatentable over Hsu et al. (US 6,086,782) in view of Praller et al. (DE 10031020).

Hsu teaches the composition as set forth in **claim 1** above.



Hsu further teaches that while the preferred terpenes include  $C_{10}H_{16}$  hydrocarbons, including acyclic terpenes (such as ocimene, myrcene, etc., see Table 2), other hydrocarbons possessing similar fundamental chemical structures may be used (col 4 ln 47-56).

Hsu does not specifically teach the hydrocarbons of the composition to be the hydrocarbons of instant claim 6. Praller teaches heat carrier solutions comprised of non-cyclic hydrocarbons of at least five carbon atoms (abstract) to form solutions with a temperature use range of from -150 to +120 °C (abstract). Praller teaches the hydrocarbons to include 3-methylpentane, 2-methylpentane, iso-hexane, 1,5-hexadiene or 1-hexene (page 2, [0009]; claims). Praller and Hsu are analogous art because they are concerned with the same field of endeavor, namely low temperature heat transfer solutions comprising hydrocarbons. At the time of the invention a person having ordinary skill in the art would have found it obvious to use the hydrocarbons of Praller in the composition of Hsu and would have been motivated to do so as Hsu invites the use of hydrocarbons possessing similar fundamental chemicals structures (Hsu col 4 ln 47-52) and would also have been motivated to do so to form a composition that works equally well at very low and high temperatures (Praller, abstract).

### ***Correspondence***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JANE L. STANLEY whose telephone number is (571)270-3870. The examiner can normally be reached on Monday-Thursday, 7:30 am - 5 pm, alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on (571) 272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Eashoo/  
Supervisory Patent Examiner, Art Unit 1796

/JLS/